Resource Economics and Systems Analysis Working Group:

Antonio Miguel Bento, Cornell (facilitator)

Joel R. Landry, Cornell (recorder)

Participants: Margaret Brennan (Rutgers University), Jonathan Rubin (University of Maine), Paul Adler (USDA-ARS), Matt McArdle (Mesa), Stephane Corgie (Cornell).

Guidance of the discussion:

What are the cost and benefits of feedstock alternatives?

Issues with alternative technologies?

What is the role of federal policy in the creation of incentives?

Feedstock availability and location

Identify possible economic agents (e.g. who are the land owners of forest land?)

What are the environmental consequences of various feedstock proposals?

What is the optimal location and scale of plants?

What ways to quantify the economic revitalization impacts of bioenergy production?

From Mark Downing (Oak Ridge):

Time frames for consideration: 2008. 2017. 2030.

Key goals of policies for bio-energy:

How do policies affect land-use?

How much GHG are you displacing?

How are you affecting oil imports?

What data is needed to answer these questions?

Potential impacts on other commodity prices?

What are the costs of infrastructure to make feedstock feasible?

What will it take to put E10 into every vehicle by 20XX? Compared to other alternatives?

What is the optimal blend of feedstocks and technology to achieve GHG reductions at the lowest cost?

What is the time-line?

Given the public policy goal of bio-energy adoption of greenhouse gas reduction, what is the cheapest ways to achieve green-house gas emissions, via electricity generation or fuel production? Fuel production does not achieve that goal today (cellulosic may in the future). CH&P does today. Fischer Drake diesel using wood does as well. Federal policy may be necessary to create demand.

What model is necessary?

What are the economic models currently available? And what data exists to feed into those models? These models should take prices into account to look at commodity displacement, changes in land-use patterns and GHG displacement, and impacts on oil imports. Many land-use models ignore endogenous plant decision-making and do not include markets on renewable energy. Need general equilibrium model that takes into account renewable energy. Data needs for the model? What outputs is it going to produce? Will it tell us how to deal with the four F's? Will need to address issues with trade. Can the model be general or does it need to be state-specific or cite specific, or both? To satisfy the regional level, need to aggregate up across the various models.

Need life-cycle analysis of GHG impacts for other feedstock types; e.g. forest residue. Need CGE that deals with lifecycles of several feedstocks.

What is the smallest unit that we need to work at, 25 miles, 50 miles? Distance depends on cost, infrastructure available. Varies by state/subregion.

What Data?

County level data would be useful to acquire. Maine has it. NJ has it. PA has it. NY has it (all regions represented in WG). Region as a whole has poor data sharing. Lack of information on local feedstock availability.

Is the BTR accurate? For NJ, no?

Need price data, costs of production data, transportation costs, infrastructure costs. What are the actual costs of production, extraction, of forest resources, etc?

Feedstock Availability:

Urban areas→NJ and urban NY, feedstock is MSW. What conversion technologies are we going to use and what are the end products?

Other areas of the NE→Dedicated energy crops and ag residues.

Maine→ feedstock is forest residues.

Pertinent Questions/Discussion:

Question is *what feedstocks are available at what price*?, not, *what feedstocks are available*? What are the pathways for putting the technology in place and combining technologies to make them viable for energy production? Do we need flexible biorefineries that allow for multiple feedstocks given various price levels of input commodities? The large scale bio-refinery concept does not make sense for all areas, but rather, region specific, e.g. Maine with pre-established paper, wood industry, it may make sense. Need to understand the assumptions that determine the economically viable distance for biorefinery location. Need to know what the end-use is of the feedstock. Conversion pathways will dictate which feedstock is optimal. Cost is different for different areas.

For NJ, municipal solid waste (MSW) presently makes sense via co-firing. Costs are different depending on the way in which waste enters the waste stream. Can one get Americans to self-separate waste at the beginning of the waste stream? Is an educational program possible to deal with the issue and lower costs to industry? How does one link the paper industry with the infrastructure for bioenergy production? How will diversion to bioenergy impact the prices of other wood and paper products?

Need to identify region specific feedstocks that make sense for various technologies given various prices. MSW in NJ. Woodchips in Maine. From a resource perspective we are not the same region. Various feedstocks and heterogeneous infrastructure, costs of production, etc. Regional solution must be state or sub-state specific.

NJ started pilot programs to get community involved with the ways they recycle. It is important to show a demonstration via a pilot and extension efforts prior to widespread adoption.

Need policies to offset risk. Insurance mechanisms are needed to make biomass feasible for farmers and for industry. Role of state governments in insurance and information sharing (informing farmers on profits from switching to bio-fuel feedstock from food production, etc.). Need state/ local policy to address the issue. Should incentives be on plant location or on biomass production?

Feedback on Conference:

Questions may be the wrong ones. Social issues, feasibility issues are treated as secondary. Conference places too much emphasis on recent technologies, etc.